DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. **Claim 1, 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US6066598) in view of Ahn (US 5834405)**.

Ishikawa teaches a method for forming a superconducting component with a stack of alternative superconductor layers and dielectric layers (i.e. insulating layer) (Figure 1) wherein superconductors (item 1, 2, 3, 4, 5 Figure 1) and thin-film dielectrics (item 30-1, 30-2, 3-0-3, 30-4, 30-5) are alternately laminated with each other thus a superconducting multilayer electrode is formed on the top surface of a dielectric substrate (Figure 1 item 10, column 3 lines 56-60) and a main transmission line (item LN10 Figure 10) and sub-transmission lines (LN1-LN4 figure 1) are formed (column 4 lines 35-46) there. Ishikawa also teaches a conductor (item 12 Figure 1) for an input terminal is formed on the direct substrate (item 10, Figure 1) and another conductor (item 13 Figure 1) for an output terminal is formed on dielectric substrate (column 5 lines 1-6) wherein capacitive coupling between one end of superconductor 5 to the input/output terminal are used (column 5 lines 11-16).

Regarding claim 1, 3 and 5, Ishikawa fails to expressly teach incorporating at least one terminal in the submission lines, i.e. direct connection of terminal to the place of the capacitive coupling as described above.

Ahn teaches a method for extending the pattern of the metallic conductor lines and superconducting oxide reaction layer to a surface of the substrate to establish an electrical contact between (e.g. terminal means) at an appropriate portions of a superconducting ceramic substrate or superconducting multilayer (claim 20, column 6 lines 25-30).

It would have been obvious to one of ordinary skill in the art to adopt the direct contact (terminal means) as shown by Ahn to improve the superconducting component of Ishikawa for expanding different connections means between superconducting lines and for establishing terminals at an appropriate portion of a superconducting multilayer. Furthermore, it is to be noted that this direct incorporation terminal with the line segment is merely one of several obvious options that a person skill in the art seeking to solve the stated connection problem needed for particular connection for intended use of the superconductor component under certain circumstance.

It is to be noted that a prior step of depositing a superconducting film on a substrate followed by the depositing of stack is expected since superconducting and dielectric layers are alternatively laminated.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US6066598) in view of Ahn (US 5834405) as applied to claim 1, 3, 5 above, and further in view of Lee et al (IEEE TRANSACTIONS ON MAGNETICS, 1991, 27: 1365-1368).

The references of Ishikawa in view of Ahn have been described as above. The references do not expressly state that the material for superconducting and dielectric film is crystallized.

Lee et al teach that the $LaAlO_3$ and YBCO (i.e. $YBa_2Cu_3O_7$) (page 1365 left column "introduction" second paragraph line 2) can be used for superconducting multilayers (abstract lines 1-2), where $LaAlO_3$ and YBCO films can be crystallized (page 1366 left column "Results" first paragraph lines 1-4) with sharp and clean interface between the deposited insulating crystal $LaAlO_3$ and its substrate as indicated by Lee et al (page 1365 abstract lines 6-7).

It would have been obvious to one ordinary skill in the art the time of invention filed to crystallize the insulating and superconducting film of Lee to improve the superconductors of Ishikawa in view of Ahn. One of ordinary skill in the art would have been motivated to do so because the crystallization of the films can provide sharp and clean interface (i.e. Perfectly crystallized) between the insulating and superconducting film as indicated by Lee et al (page 1365 abstract lines 6-7). Furthermore, adopting a known technique for improving similar method is well within the scope of one ordinary skill in the art.

3. Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US6066598) in view of Ahn (US 5834405) as applied to claim 1, 3, 5 above, and further in view of Higaki (US5219827).

The references of Ishikawa in view of Ahn fail to expressly teach etching the stack and the superconducting film.

Higaki teaches an etching method for producing an inductive component

comprising means for depositing a stack of superconducting films by vacuum evaporation and insulating films and means for etching the superconducting film by hydrochloric acid (column 4 lines 10-11m 59-63, Figure 1 B, column 6 lines 29-39, 58-65), which read onto the recited well known depositing and etching method in the instant specification (page 7 lines 6-12).

It would have been obvious to one ordinary skill in the art the time of invention filed to adopt the etching technique as taught in Higaki to modify the multilayer superconductors of Ishikawa in view of Ahn. One of ordinary skill in the art would have been motivated to so because this known technique can successfully stack and etching different components of multilayer superconductors for a desired pattern as shown by Higaki. Furthermore, adopting known technique from a similar method is well within the scope of one ordinary skill in the art.

Response to Argument

Applicant's amendment about specification filed on 08/13/2009 have been acknowledged, previous objection to specification has been withdrawn due to applicant's amendment.

Applicant's arguments filed on 08/13/2009 have been fully considered but they are not persuasive. In response to applicant's argument that Ishikawa and Ahn references are used at different size, it is noted that the size are all scalable depending on the operating parameters. References provide a reasonable suggestion for capability of connecting the conductor with the alternatively

stacked superconductor and insulators directly for providing electrical contacts. Ishikawa further teaches the alternatively stacked superconductors and dielectric layers can be used as resonators (Fig 3) and used as conductors, or different lines (col 7). Thus the recited line segment with a conducting layer is expected. Furthermore, as for the applicant's allegation that Ishikawa not teaching the alternatively stacked superconducting layers and dielectric layers deposited on a conducting or superconducting layer, it is noted that limitation is not claimed in the instant claims.

As for the arguments about using inductive coupling to replace the capacitive coupling preventing device function, it is noted that two connections are commonly used in the art wherein one is the capacitive coupling (gap) while the other one is direct connection (inductive coupling) such as demonstrated by US6239674, which teaches that these two connections are functional equivalent for coupling terminals with resonators via either capacitance or inductance (col 3 ln 49-53). Ishikawa already teaches the multilayer superconductors can be used as a resonator. Thus either direct connection or capacitive coupling can both function normally absent evidence to the contrary and one of ordinary skill in the art would have been obvious to substitute capacitive with inductive or vice verse because both can provide needed connections. Therefore, all the limitations are expected from the applied references and the claimed subject matter is not patentable distinct over the prior arts.

In order to make the claimed subject matter distinct over the applied references, applicants can provide evidence or data/example to demonstrate the

recited subject matter in the instant applicant is superior to the subject matter as disclosed by the references.

Conclusion

All the elected claims are rejected for the reasons of record.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am-5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/
Examiner, Art Unit 1793
10/15/2009

/Melvin Curtis Mayes/
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